CONCLUSIONS AND RECOMMENDATIONS

IMPLICATIONS FOR REGIONAL PREHISTORY

A total of 13 prehistoric sites were identified in the five proposed borrow pit and wetland replacement areas (Table 2). Five of the sites were located along Taylor's Gut in Area 2. These five sites were only partially tested by Phase I operations because of access problems. Phase I testing was completed at the remaining eight sites: 7K-C-203, 7K-C-393, 7K-C-395-399, and 7K-C-409. Five of these sites, 7K-C-395, 7K-C-396, 7K-C-397, 7K-C-399, and 7K-C-409 are small procurement/ processing sites.

Although these five procurement/processing sites are expected to have limited numbers of artifacts and associated cultural features, these sites can still yield significant information about regional prehistory. While none of these five sites were tested by Phase II operations due to design changes, the potential National Register eligibility of these sites should be determined if these sites are ever impacted by future highway construction or development. The eligibility of individual sites would be determined by the presence of significant deposits of artifacts and cultural features in undisturbed contexts. As simple procurement/processing sites, however, these five sites are expected to have small amounts of debitage, little evidence of tool manufacture, limited ceramic artifacts, and only occasional processing and habitation features.

Two prehistoric sites, 7K-C-396 and 7K-C-399, are probably micro-band, and perhaps even macro-band, base camps. Both sites are located in the eastern part of Area 4 and are oriented to Muddy Branch. Site 7K-C-396 consisted of a large, 3.3 acre low density scatter of prehistoric artifacts along the north side of Muddy Branch near its confluence with a small unnamed tributary. The size, setting, and the presence of undisturbed artifacts and prehistoric features at this site indicates a more intensive micro-band or perhaps even a macro-band level occupation. As a micro- or macro-band base camp, 7K-C-396 may include a variety of tool types, abundant lithic debitage from tool reduction and manufacture, and numerous house pits, trash deposits, and activity areas.

Two macro-band base camps, 7K-C-398 and 7K-C-203, were identified in Areas 4 and 3 respectively. Site 7K-C-398 consisted of the remains of a Woodland I base camp and a later, unrelated, eighteenth century occupation along the south side of Muddy Branch. Although part of the historical

TABLE 2

Current Management Status of All Archaeological Sites in the Proposed State Route 1 Borrow Pit and Wetland Replacement Areas

Site	Project Area	Components	Phase I Testing	Phase II Testing	National Register Eligible	Further Work
D. Palmatory House (7K-A-122, K-6507)	2N	Historic	Completed	Access denied	Unknown	No
7K-A-123, K-6508	2N	Prehistoric	Partial	Access denied	Unknown	No
7K-A-124, K-6509	2N	Prehistoric	Partial	Access denied	Unknown	No
7K-A-121, K-6506	2N	Prehistoric	Partial	Access denied	Unknown	No
7K-A-119, K-6504	2N	Prehistoric	Partial	Access denied	Unknown	No
7K-A-120, K-6505	2N	Prehistoric	Partial	Access denied	Unknown	No
K-3982	2N	Historic	Partial	Access denied	Unknown	No
Pollack Site (7K-C-203)	3	Prehistoric and Historic	Completed	Completed	Yes	Yes
7K-C-203A	3	Prehistoric	Completed	Completed	Yes	Yes
7K-C-203B	3	Prehistoric	Completed	Completed	Yes	Yes
7K-C-203C	3	Prehistoric and Historic	Completed	Completed	Yes	Yes
7K-C-203D	3	Prehistoric	Completed	Completed	Yes	Yes
7K-C-203E	3	Prehistoric	Completed	Completed	Yes	Yes
7K-C-203F	3	Prehistoric	Completed	Completed	Yes	Yes
7K-C-203G	3	Prehistoric	Completed	Completed	Yes	Yes
7K-C-203H	3	Historic	Completed	Completed	Yes	Yes
A.J. Wilson Farm (7K-C-400, K-2071)	4W	Historic	Completed	None; site not to be impacted.	Unknown	No
7K-C-393, K-6491	4W	Prehistoric	Completed	None; site not to be impacted.	Unknown	No
7K-C-397, K-6495	4E	Prehistoric	Completed	None; site not to be impacted.	Unknown	No
7K-C-398, K-6496	4E	Prehistoric and Historic	Completed	None; site not to be impacted.	Unknown	No
7K-C-399, K-6497	4E	Prehistoric	Completed	None; site not to be impacted.	Unknown	No
7K-C-396, K-6494	4E	Prehistoric	Completed	None; site not to be impacted.	Unknown	No
7K-C-395, K-6493	4E	Prehistoric	Completed	None; site not to be impacted.	Unknown	No
A. Laws Farm (7K-C-394, K-6492)	4E	Historic	Completed	None; site not to be impacted.	Unknown	No
7K-C-409	4E	Prehistoric	Completed	None; site not to be impacted.	Unknown	No

Note: Recommendations for further work are contingent upon current borrow pit and wetland replacement needs for the State Route 1 corridor. Additional Phase I testing is warranted at all of the sites in Area 2 where testing was not completed. Phase II testing is warranted at the following sites if these sites are impacted by future construction: 7K-A-122, 7K-C-393, 7K-C-394, 7K-C-396, 7K-C-397, 7K-C-398, 7K-C-399, and 7K-C-400.

site may have impacted the earlier prehistoric site, the presence of diagnostic Woodland I artifacts and features in intact subsoil deposits indicates a high potential for further intact remains. The presence of Woodland I pottery in a number of shovel tests indicates excellent preservation. Site 7K-C-398 is also large (0.8 acres) and clearly defined by the Muddy Branch floodplain to the north. Further testing may also find that this site is related to nearby 7K-C-399. Both sites are located on the same sandy rise between Muddy Branch and an unnamed tributary to the east. If these sites are related, data from the unplowed portions of 7K-C-399 could yield important data for interpreting the larger 7K-C-398 and other Woodland I sites in general.

The largest and most significant prehistoric site identified by Phase I and II testing was the Pollack site, 7K-C-203 (Area 3). The site itself measures over 65 acres in size. Phase II testing found that over 16.9 acres, of the 50 acres of the site to be impacted by proposed borrow pitting, contained significant evidence of intensive prehistoric occupation over all four major time periods (7500 B.C.-A.D. 1600). The range of pottery, tools, and features confirms the National Register eligibility of the site. The range of artifacts, features, and environmental settings at the Pollack site also indicates that it was both intensively and extensively occupied over at least two major time periods, Woodland I and Woodland II. The extent of the Paleo-Indian and Archaic components of the Pollack site do not appear to be as great as the two later periods. Judging from the predominance of Woodland I ceramic artifacts and projectile points, site 7K-C-203 was probably most intensively occupied from 3,000 B.C. to A.D. 1000.

The Pollack site would also be only the second large-scale excavation of a Woodland I base camp site with well-preserved sub-surface features in central Delaware. Furthermore, in all of Delaware only one other base camp site (the Delaware Park site - Thomas 1981) has been subjected to large-scale intensive excavations and only a few base camp sites have had small sections intensively excavated (eg. Clyde Farm - Custer, De Santis, and Watson 1987). Similar large-scale excavations, however, have also recently been undertaken at two other Woodland I base camps, Carey Farm (7K-D-3) and the Snapp site (7NC-G-101). Data from the Pollack site could be compared to these two sites.

In general, the site locations noted in this study confirm the interpretations of Woodland I interior procurement and base camp sites noted in the original predictive survey of the State Route 1 Corridor (Custer et al. 1984). These site locations are also consistent with those noted in the Management Plan

for Delaware Prehistoric Cultural Resources (Custer and De Santis 1986) and previous work in central Delaware (Custer et al. 1984; Custer, Bachman, and Grettler 1986, 1987; Custer and Bachman 1986; Bachman, Grettler and Custer 1988; Hodny, Bachman, and Custer 1989; and Riley et al. 1993). For the most part, Woodland I settlement focused on major drainages. From these base camps, forays to specific resources were made. These resources produced discrete procurement and processing sites. Based on the sites identified in this study, forays from base camps along the Leipsic River (7K-C-203) and Muddy Branch (7K-C-398) produced discrete micro-band camps and procurement/processing sites. For example, forays from 7K-C-398 on Muddy Branch were probably made to nearby micro-band base camps (7K-C-396 and 7K-C-399) and to local procurement/processing sites (7K-C-395, 7K-C-396, 7K-C-399, and 7K-C-409).

Further study of the constellation of interior micro-band and procurement/processing sites around the Pollack site and 7K-C-398 is needed to better understand the organization and hierarchy of Woodland I settlements. In this hierarchical model of base camps and procurement/processing sites, more generalized forays appear to have produced scattered, less discrete sites consisting of generalized lithic scatters. More focused and intensive forays appear to have produced more discrete sites used for longer, and probably more intensive, periods of procurement activity. In any event, further study of the variability of Woodland I settlement patterns is needed (see Custer 1988:45-46) and could be compared to other sites in the Middle Atlantic region.

One important settlement pattern question that could be addressed by further work at the Pollack site is the degree of sedentary settlement in Woodland I populations. Current models of Woodland I Period settlement in the Delaware Coastal Plain (Custer 1984; 1989) note that base camps provide the residential focus for settlement. In most of these models, the settlement at the base camps has traditionally been viewed as relatively sedentary. The presence of pit houses and sub-surface storage features is seen as an indication that the occupations of the sites spanned a significant portion of the year, if not the entire year. However, recent research at other similarly dated sites in the Delaware River Valley (Watson and Custer 1990) has suggested that Woodland I groups may not have been as sedentary as previously thought. Further research at the Pollack site could yield data on the duration and possible seasonality of prehistoric settlement at the site.

The broad range of lithic raw material present at all of these Woodland I sites and the presence of a high percentage of flakes with cortex indicates cobble reduction. This range of lithic raw materials includes jasper, quartz, quartzite, chalcedony, and chert. The presence of non-local argillite and rhyolite at the three largest sites, 7K-C-203, 7K-C-396, and 7K-C-398 indicates incipient trading patterns and/ or long-distance lithic procurement patterns. These larger sites also have a full range of tool types including early stage biface rejects, cores, utilized flakes, flake tools, and carefully curated bifaces, including heavily resharpened points. Some of the bifacial knives and projectile points at the Pollack site in particular showed evidence of multiple sharpening and reuse. The presence of diagnostic Woodland I ceramics at all three sites (predominantly Marcey Creek and Hell Island wares) and cultural features at two sites (7K-C-203 and 7K-C-396) indicates a range of procurement, processing, and domestic activity.

The prehistoric components of the Pollack site (7K-C-203) could also address questions regarding settlement patterns and adaptation in the Paleo-Indian, Archaic, and Woodland II periods. The extent of the late Paleo-Indian and Archaic period occupations of the site are not known, but any information on these periods would be important because of the poor quality of data from these relatively rare sites (Custer 1986: 172-74). Of special interest in these two earliest periods are questions concerning site locations, lithic procurement and the use of nonlocal materials, and paleoenvironmental settings. The large size of the Pollack site and the presence of both primary and secondary drainages and multiple environmental settings may also yield additional significant information about prehistoric life on the Delmarva before 3000 B.C.

Although the Pollack site does not appear to have been as intensively utilized during the Woodland II period as during Woodland I times, this site could yield significant data on settlement and subsistence patterns between A.D. 1000-A.D. 1650. The presence of diagnostic Woodland II pottery, near high concentrations of intact prehistoric cultural features suggests that house pits, trash features, and activity areas may be present. Northern Kent County and southern New Castle County have been hypothesized as areas of low population density during Woodland II times (Wilkins 1976; Griffith 1977) and data from the Pollack site could test this hypothesis.

Additionally, a comparison of Woodland II settlement-subsistence systems and social organizations to Woodland I systems is an important research question. The presence of spatially discrete

Woodland I and Woodland II components at the Pollack site may also yield important data about cultural and environmental changes in Delaware between these two periods.

IMPLICATIONS FOR REGIONAL HISTORY

Phase I testing identified six historical archaeological sites on four separate properties. The two earliest and most significant sites were the historical components of Areas C and H of the Pollack site (7K-C-203C and 7K-C-203H). These two sites are the remains of late seventeenth to early eighteenth century farmsteads. One other eighteenth century site was identified;the historical component of 7K-C-398 located in Area 4. The remaining three sites, 7K-A-122, 7K-C-400, and 7K-C-394, are mid-nineteenth to early twentieth century rural farm complexes. One other historical loci, K-3982, was identified in Area 2. This loci consisted of an extant early twentieth century farm that was not tested by Phase I excavations.

All six historical sites were determined to be potentially eligible for listing on the National Register of Historic Places. Diagnostic historical artifactS and features were found in undisturbed contexts and a high potential for additional intact deposits was identified at each site. Only the two Pollack sites, however, were to be impacted by proposed borrow pit and wetland replacement and were thus tested by Phase II operations.

Phase II testing at 7K-C-203C and 7K-C-203H determined that both sites are likely to yield additional data significant to current research questions in history and archaeology. These two sites are the earliest historical archaeological sites ever tested by systematic archaeological excavations. More specifically, these two early sites could be used to study four primary research domains as identified by the Historic Archaeological Resource Management Plan for Delaware (De Cunzo and Catts 1990) and the Delaware Statewide Comprehensive Historic Preservation Plan (Ames, Herman, and Siders 1989). These four domains are (1) Domestic Economy, (2) Manufacturing and Trade, (3) Landscape, and (4) Social Group Identity and Behavior (De Cunzo and Catts 1990).

Of these four domains, the two most applicable to the Pollack sites are Domestic Economy and Landscape. Broadly interpreted, these two research domains seek to reconstruct the past social, demographic, and economic landscape of central Delaware, and by implication, the Middle Atlantic

TABLE 3
Major Time Periods in Delaware History

1. 1630 - 1730 +/ -	Exporation and Frontier Settlement
2. 1730 - 1770 +/ -	Intensified and Durable Occupation
3. 1770 - 1830 +/ -	Early Industrialization
4. 1830 - 1880 +/ -	Industrialization and Capitalization
5. 1880 - 1940 +/ -	Urbanization and Early Suburbanization

region. As small late seventeenth and early eighteenth century farmsteads, the two Pollack sites could be used to trace the critical social and economic changes that occurred in central Delaware in the first period of European settlement.

This first period of settlement in central Delaware has been characterized by Ames, Herman, and Siders (1989) as a period of Exploration and Frontier Settlement (1630-1730 +/-). The major time periods in Delaware history are summarized in Table 3. Both of the Pollack sites date primarily to this period. This earliest period in Delaware history saw the first attempts at European settlement. Settlement focused along the banks of navigable rivers such as the Leipsic River and Alston Branch. These sites were along the frontier of the Delmarva interior and were on the very edge of English civilization. Beyond simple subsistence farming and hunting, European settlers in this period forged the first commercial connections between these outlying plantations and the small commercial centers of Lewes, New Castle, and Philadelphia.

The two Pollack historical sites can also be placed in the local and regional context of other early eighteenth century sites in Delaware and the Middle Atlantic. Specifically, sites 7K-C-203C and 7K-C-203H can be compared to the nearby Strickland Plantation near Smyrna (Catts, Jamison, and Scholl n.d.). The Strickland Plantation was owner-occupied from ca. 1726-1764. The earliest occupation of this site should be comparable to Areas C and H, where the absence of white salt-glazed stoneware and creamware sherds from the plow zone suggests ca. 1680-1740 occupations. Sites 7K-C-203C and 7K-C-203H could also be compared to four other mid-eighteenth century sites in Delaware: Benjamin Wynn Tenancy and Blacksmith Shop site (Grettler et al. n.d.), Thompson's Loss and Gain site (Guerrant 1988),

Marsh Grass site (Thomas 1983), and the Whitten Road site (Shaffer et al. 1988). All of these comparable sites date primarily to the second major time period in Delaware, Intensified and Durable Occupation, 1730-1770 (Table 3).

Due to the very early nature of both Pollack historical sites, basic data collection on seventeenth and early eighteenth century lifeways would be a primary goal of data recovery operations. This data would include archaeological and material culture information on architecture and land use, farmstead layout and spatial organization, foodways and faunal remains, and self-sufficiency and market participation. Phase II testing recovered some of this information and determined that both sites have a very high potential for further significant data.

The remaining four historical archaeological sites identified during this project were one other eighteenth century site, 7K-C-398, and three mid-nineteenth to early twentieth century farms: 7K-A-122, 7K-C-394, and 7K-C-400. None of these sites were tested by Phase II operations, although such testing is warranted if these sites are ever impacted by future construction.

Site 7K-C-398 appears to be the remains of a small eighteenth century farmstead along the south bank of Muddy Branch. The setting of this site is similar to two other nearby and recently excavated mid- to late eighteenth century tenancies, the Loockerman's Range component of Dover Downs Hill B (7K-C-365B, Grettler et al. 1991a) and the Benjamin Wynn Tenancy and Blacksmith Shop site (7K-C-362, Grettler et al. n.d.). The Muddy Branch area was intensively settled in the eighteenth century and a great deal is known about the early land owners and tenants living there. Further research on this site could seek to answer many of the same questions as those applicable to the two Pollack sites.

Site 7K-C-398 could also be compared to many of the same mid-eighteenth century sites as 7K-C-203C and 7K-C-203H. Such mid-eighteenth century sites yield data not only on the second period in Delaware history (Table 3), but also data on the tremendous social and economic changes occurring in the late eighteenth and early nineteenth centuries in Delaware. The seeds of these later changes were sown in the strong colonial economy and widespread agricultural tenancy that developed earlier in the eighteenth century.

Site 7K-C-398 also contained a significant prehistoric component. Although this prehistoric component dated to the Woodland I period, the possibility of Woodland II and perhaps even Contact

period remains exists. Contact period sites (A.D. 1650-A.D. 1750) are extremely rare and any data from 7K-C-398 or the two Pollack historical sites (7K-C-203C and 7K-C-203H) would be very significant to our understanding of both prehistoric and historical lifeways during a period of profound change for both cultures. Phase II testing, however, found no evidence of Contact Period remains at any of these three sites.

The single most important social and economic change in nineteenth century Delaware was the replacement of a thriving eighteenth century colonial economy with a new, but increasingly volatile, national economy after the American Revolution (Grettler 1990; Lindstrom 1973). This vast change occurred between 1780 and 1840 and affected all levels of Delaware and Middle Atlantic society. Similar changes after independence from Great Britain were occurring in other parts of the country, particularly in the older and more settled areas of New England and the Chesapeake.

The effects of this broad economic change continued through the rest of the nineteenth century. Some of these effects directly affected agriculture and many nineteenth century farms in Delaware, including 7K-A-124, 7K-C-394, and 7K-C-400. As archaeological sites with little or no standing structural remains, these sites reflect broad patterns of site formation, land use, and agricultural change over the nineteenth and early twentieth centuries. The research domains of Domestic Economy and Landscape (De Cunzo and Catts 1990) have proved to be the most fruitful avenues of investigation for sites from this period. Indeed, a number of similar nineteenth and twentieth century farms have been studied in central Delaware and recovering comparable data from these three sites would be the primary goal of further research. Some of these comparable owner- and tenant-occupied nineteenth and early twentieth century farms in central Delaware include the Buchanan-Sawin Farm (Scholl et al. 1993), Moore-Taylor and Wilson-Lewis Farmsteads (Grettler et al. n.d.), W. Eager site (Grettler et al. 1991b), and the C. Kimmey Tenant Farm site (Jamison et al. n.d.).

In conclusion, the goal of all further research on the historical archaeological sites within all of the wetland construction areas is to collect comparable data and to ask comparable questions over time in order to better understand diachronic cultural processes. Data from the two historical components of the Pollack site, in particular, can yield significant information pertaining to current research questions in historical archaeology and the history of Delaware and the surrounding Mid-Atlantic region.

CULTURAL RESOURCE RECOMMENDATIONS

Phase I and II archaeological investigations were conducted on over 490 acres of proposed borrow pit and wetland replacement areas in Kent County, Delaware. All of these improvements are associated with the construction of State Route 1. Phase I testing identified 17 prehistoric and historical archaeological sites on five separate project areas. The current status and management recommendations for all 17 sites are summarized in Table 2.

Phase II testing was undertaken on only one property, the Pollack property (Area 3), located south of Smyrna near Garrison's Lake. This property contained only one site, the Pollack site (7K-C-203). The 16 sites on the remaining four project areas were not tested by Phase II operations because design changes to State Route 1 removed these four areas from consideration for proposed borrow pit and wetland construction. The design changes determined that the Pollack property would be able to supply all current borrow pit and wetland replacement needs.

Phase II testing at the Pollack site identified eight discrete loci of significant prehistoric and historical occupation. The Pollack site was first identified in 1985, and was determined to be eligible for listing in the National Register of Historic Places in 1988. The site consists of a 65 acre parcel on a peninsula of land bounded on the north by the Leipsic River and on the south and east by Alston Branch. Over 1500 test units were excavated during the Phase II survey. This survey identified the limits of these eight loci. Phase II testing also sought to recover sufficient archaeological information to generate a meaningful data recovery plan should avoidance, the preferred mitigation alternative, prove impossible.

Phase II testing at 7K-C-203 recovered diagnostic prehistoric artifacts from the late Paleo-Indian, Archaic, Woodland I, and Woodland II periods. The site was a large base camp used extensively during Woodland I times (3000 B. C. - A. D. 1000) and possibly other periods. The Woodland I component of 7K-C-203 was the primary prehistoric component identified. Artifacts, including Woodland I and II pottery, were found in buried, intact contexts and evidence of prehistoric features were also found. Significant prehistoric components were found in seven of the eight loci of 7K-C-203: Areas A, B, C, D, E, F, and G.

Phase II testing at the Pollack site also identified the limits of two late seventeenth to early eighteenth century farmsteads. These two farmsteads date to approximately 1680-1740 and were located

in Areas C and H. These two farmsteads are approximately 3,000' apart and are both oriented to Alston Branch. Diagnostic seventeenth and early eighteenth century artifacts including Staffordshire earthenwares and Rhenish blue and gray stonewares were recovered from both plow zone and intact subsoil contexts. Evidence of intact historical features were also found at both loci.

Further work is recommended at all eight loci of the Pollack site if avoidance, the preferred mitigation alternative, proves impossible. The Pollack site is a known National Register site and data from this site would be an important contribution to our understanding of Delaware history and prehistory.

In addition to the Pollack site, 16 other sites were identified and tested (Table 2). As these sites are not currently threatened by proposed construction, no further work is recommended at present for any of these sites. Phase I testing, however, should be completed at six sites in Area 2 (7K-A-119, 7K-A-120, 7K-A-121, 7K-A-123, 7K-A-124, and K-3982) if these sites are ever impacted by future construction. Similarly, Phase I testing at seven sites determined that these sites would warrant Phase II testing if they were ever impacted by future construction. These seven sites are 7K-A-122, 7K-C-393, 7K-C-394, 7K-C-396, 7K-C-397, 7K-C-398, 7K-C-400. The remaining two sites determined to never warrant further work are 7K-C-395, and 7K-C-409.